Computer-Mediated Negotiated Interactions: How is Meaning Negotiated in Discussion Boards, Text Chat and Videoconferencing?

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Abstract

Despite the amount of published research on the use of text-based computer-mediated communication (CMC) in second language acquisition (SLA), very little attention has been paid to voice-based CMC (audioconferencing and videoconferencing) and to how it compares with the better known text-based CMC modes. This chapter investigates and compares the potential of three different CMC modes (discussion board, text chat and videoconferencing) to foster negotiated interactions (negotiation of meaning routines and negative feedback), as well as the influence of task type on such interactions. From the analysis of the interactions generated by the completion of meaning-focused tasks as part of an online module of English for specific purposes (ESP) aimed at first year Master's Degree Biology students (French non native speakers (NNSs) of English), this study demonstrates that closed tasks fostered more negotiation work than open tasks, and that all three CMC modes gave rise to negotiation of meaning. However, significant differences were highlighted between the three CMC modes under study: overall, videoconferencing was conducive to a lot more negotiation of meaning than the other two CMC modes, and discussion board interactions did not generate any corrective feedback.

Keywords: negotiation of meaning, negative feedback, CMC, text chat, discussion board, videoconferencing, meaning-focused tasks.

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1. Introduction

As was noted by Henri and Lundgren-Cayrol (2001), distance learning courses are often limited to individual learning situations and therefore lacking in connectivity between learners (p. 5). This criticism has, however, slowly been tackled by the growing use of information and communication technology (ICT) to enable such interactions to take place in what has become known as computer-mediated communication. CMC encompasses a wide range of activities such as sending e-mails, posting topics on a discussion board, chatting or talking to someone on the internet, and can thus be either synchronous (taking place in real time) or asynchronous, text-based (when communication occurs through the written medium) or voice-based, and one-to-one (one person communicates with another person) or one-to-many. Since the early 1990s, growing interest has been shown in CMC for language learning and teaching in the field of second language acquisition, which has now become a field of research in itself known as network-based language teaching (NBLT). Indeed, as CMC supports interaction, it has potential for interlanguage development (Kelm, 1996). If most published research in the field of NBLT originally dealt with the use of discussion boards, more varied modes of CMC for language learning and teaching are now being investigated, even though text-based CMC (especially text chat) still prevails. Research on voice-based CMC for language learning, however, remains confidential. The aim of this chapter is to fill part of this gap by examining the impact three different CMC modes (discussion board, text chat and desktop videoconferencing) can have on the type of interaction learners engage in, as interaction is believed to be beneficial to interlanguage development.

1.1. Interaction in SLA

The potential of interaction to interlanguage development has given rise to much published research (Gass, 1997; Gass, Mackey, & Pica, 1998; Long, 1983, 1996; Pica, 1994; Py, 1990). Building on Krashen's (1981) input hypothesis, which claims that learners acquire a second language (L2) when they are able to understand the input they are exposed to, these researchers put forward the idea that interaction can be considered as an essential source of comprehensible input. However,

Long's (1983) interaction hypothesis takes Krashen's (1981) theory one step further as it states that exposure to comprehensible input is not enough to ensure acquisition and that it should be complemented by social interaction. Indeed, Long (1983) considers interaction between learners as the best type of input for language acquisition as it gives learners exposure to more accessible input thanks to all the adjustments their interlocutors are able to make on their request. In this way, a more competent speaker will be able to provide a more comprehensible input to his less competent interlocutor and thus help their interlanguage develop. These adjustments to the interaction, which occur whenever one of the interlocutors experiences problems to understand what is being said and which increase input comprehensibility, are termed negotiation of meaning (Pica, 1994).

1.2. Negotiation of meaning

Negotiation of meaning is claimed to play an important part in SLA as it is supposed to offer a connection between input, internal learner capacities and output in productive ways (Long, 1996). In other words, being engaged in interpersonal interaction during which comprehension problems that can be negotiated arise supports acquisition (Ellis, 1999, p. 4). Pica (1994) showed that negotiation routines give rise to a lot more input modification than any other part of the interaction between learners. The first attempt at modeling negotiation routines was made by Varonis and Gass (1985) who designed a four-phase model: first, a trigger (which can be lexis-based, grammar-based, syntax-based or content-based) sets off the negotiation routine. Phase two consists of a signal from the interlocutor aimed at showing their non-comprehension. This signal can take the form of a clarification request, a confirmation check or a comprehension check (Long, 1983). The next phase is the response to the signal, which can be a self-repetition, a paraphrase or an incorporation (Long, 1983). The last phase –which is optional– is the reaction to the response given, its objective being to signal the end of the negotiation routine and to show that the interactants are ready to resume their conversation.

In addition to his original theory, Long (1996) later claimed that negotiation of meaning can also contribute to L2 acquisition through negative feedback:

this form of corrective feedback that learners receive from their interlocutors, and the opportunities to repair their own utterances that stem from it, are also suggested to be facilitative to interlanguage development. Negative feedback can either be explicit (explicit correction by the interlocutor, question asked by the interlocutor to prompt correction) or implicit (recast, i.e., implicit correction of the speaker's utterance by repeating it in its correct form), and can also give rise to self-correction. It is beneficial to L2 acquisition as it encourages learners to focus on form while completing a learning task.

1.3. Focus on form and meaning-focused tasks

Long (1983) emphasises the importance for learners to focus on form while they are processing meaning, which is one of the possible outcomes of negotiation of meaning as learners' attention can temporarily shift from meaning to form as comprehension problems arise (Long & Robinson, 1998). Focus on form through negotiation of meaning occurs during the completion of a meaning-focused task as negotiation of meaning and modified output are claimed to be more prevalent in goal-oriented tasks than in casual conversation (Pellettieri, 2000). According to Ellis' (2003) typology, tasks can be either open or closed. Open tasks include opinion gap tasks, a good example of which could be a debate. Problem-solving tasks can be either open or closed tasks, depending on how contrived they are. Following Pica, Kanagy and Falodun (1993) who claimed that closed tasks are likely to give rise to more negotiation of meaning, Pellettieri (2000) thus recommends to set up goal-oriented tasks with a limited number of possible outcomes to encourage negotiation of meaning.

1.4. Research questions

This chapter is based on previously published research on negotiated interaction through CMC and aims at exploring potential differences and similarities in the use of negotiation of meaning routines and negative feedback between three modes of CMC: asynchronous text-based CMC (discussion board), synchronous text-based CMC (chat) and synchronous voice-based CMC (desktop videoconferencing). It reports on a study we carried out as part of an

action-research project whose starting point was a problem identified in the field: the interactional competence –which we see as the "fifth element", following Kramsch (1986) and He and Young (1998)– in English of a group of French Master's degree students specialising in biology was considered to be under-developed compared to the other four skills (written and oral comprehension, written and oral production). Consequently, the solution envisaged was to set up an online English for specific purposes course following the action-oriented approach encouraged by the Common European Framework (CEF) for languages and thus promoting interactions (more appropriately termed "co-actions" in Puren, 2002) between learners. This was thought to be a way of giving learners more opportunities to interact in English about subject-specific topics outside the English classroom. Indeed, the main objective of the course was to help students develop their interactional competence through computer-mediated collaborative work, with the technical support of the experimental virtual learning environment called CLADUO (Centre de Langues A Distance de l'Université d'Orléans). Negotiation of meaning is an important component of interactional competence (Kramsch, 1986) and was thus the focus of part of our research project. This chapter aims at answering the following research questions:

1. Does negotiation of meaning take place in all three CMC modes?

2. Which types of negotiation of meaning occur in the three different CMC modes?

3. Which types of negotiation of meaning occur during completion of the two different task types?

2. Method

2.1. Context of the study

This study was conducted in 2008 with a whole class of first year Master's degree students specialising in biology at a French university (Université d'Orléans).

As part of their course requirements, all students had to follow a 55h English class consisting of:

- 24h-face-to-face class aiming at developing their skills in oral scientific English with a view to making subject-specific presentations in English;
- 6h mini-conference during which all students had to present a paper in English based on a review article;
- 25h English module online (estimated time) following the CEF's action-oriented approach aiming at developing all five skills, with a strong emphasis on collaborative work and interactional competence development.

All three elements of the class were assessed on a continuous assessment basis. This chapter only reports on the research carried out about the online part of the class.

2.2. Participants

Between January and April 2008, 15 groups of four non native speakers of English took part in the class. They were all biology majors enrolled on a Master's degree programme. Prior to their participation in the English class, a computerised test in English was administered to all students using DIALANG, a language diagnosis system developed by several European higher education institutions and based on the CEF's common levels (A1 to C2). In written comprehension, over a third of the students were assessed at levels A (A1: 7%, A2: 29%), over half were B levels (B1: 33% and B2: 23%), and the remaining 8% were C levels (C1: 7% and C2: 1%). As for listening comprehension results, they showed that just under three quarters of the students were levels A (A1: 39% and A2: 33%), while the other quarter was mostly B levels (B1: 20%, B2: 5%). As they were clearly more discriminating than the reading comprehension results, the listening comprehension results of the test were used to organise students in mixed-ability groups of four students with a view to ensuring that less competent students would make the most of peer scaffolding, hence setting the stage for potential negotiated interactions.

The students were split into three meta-groups according to the CMC mode they had to use to complete the collaborative tasks: a chat group, a videoconferencing group and a discussion board group. Four groups of four students were assigned to each meta-group (that is 16 students for each CMC mode), which makes a total of 48 participants.

2.3. Tasks

The online part of the class was organised around five different subject-specific scenarios (as shown in Table 1) whose main characteristics were as follows:

- they were composed of several macro-tasks (corresponding to Ellis's (2003) definition of tasks as "real-world activities", that is meaning-focused tasks) and micro-tasks (as termed by Guichon (2006) and described by Bertin, Gravé and Narcy-Combes (2010) as language-oriented tasks meant to fill language and communication gaps, that is, form-focused tasks);

- learners were put in realistic situations and were given a main mission to complete;

- the outcome of each scenario was a written language product that all the previous micro-tasks were geared towards completing;

- the different tasks were either individual or collaborative (though the final written production was always an individual task);

- the different tasks were organised in six parts: background and objectives, getting started, reading time, listening time, sharing time and writing time;

- the input (written and oral) that was provided to learners was progressively more complex throughout the different scenarios, as was the type of written production they were expected to complete;

- two types of collaborative tasks were set up: problem-solving (with a limited number of possible solutions) and opinion gap tasks (with more possible outcomes); all collaborative tasks were meaning-focused.

Table 1. Scenario characteristics

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Topic	Studies and careers in biological sciences	Safety in the biology lab	The genetics of cancer	Phytoremediation	GM food
Written input	Text from the American ministry of labor	Scientific article	Biology university textbook	Scientific article	Scientific abstracts from different articles
Oral input	Interviews of biological scientists	Specialised video	Specialised video	Specialised video	Conference presentation extract
Collaborative task 1	Opinion gap (CT1)	Individual	Opinion gap (CT4)	Opinion gap (CT6)	Opinion gap (CT8)
Collaborative task 2	Decision-making (CT2)	Problem-solving (CT3)	Decision-making (CT5)	Problem-solving (CT7)	Decision-making (CT9)
Outcome (written language product)	A brochure	A poster	Course material	A guide for the general public	A brochure

2.4. Equipment and materials

The online module was based on the technical support of Dokeos, a courseware management system (CMS) which was carefully selected after assessing over 40 different open-source CMSs (Sarré, 2008). The virtual learning environment thus set up included, among other tools, a chat tool and a discussion board. As no desktop videoconferencing tool was included in the CMS, an external application (Flashmeeting, developed for the British Open University by the Knowledge Media Institute (KMI)) was also selected to complement existing CMC tools. For research and feedback purposes, all three CMC tools made it possible for the tutor to have access to learners' interactions after they had taken

place, which is fairly standard in the case of discussion boards, but not so much so for the other two modes of CMC (the chat tool automatically created a log file of the interactions, and Flashmeeting automatically recorded the videoconferencing sessions which could then be played back using the integrated playback function). The videoconferencing sessions then had to be recorded using Camstudio, open-source screen recording software, which captured the sessions in a video file (avi) for easier data processing. All tools were internet-based and did not require any set up procedure by students as most of them are JAVA applications.

2.5. Procedure

All 12 groups had to complete the five scenarios over a ten-week period, each scenario needing to be completed in no more than two weeks. The six collaborative tasks (three open tasks: CT4, CT6 and CT8, and three closed tasks: CT3, CT5 and CT7) gave rise to interactions in all 12 groups. It was decided not to use data from the first scenario in order to give students time to adapt to the virtual learning environment and format of the scenarios. No instruction was given as to how long interactions had to be, the main objective being to complete the task effectively (although videoconferencing sessions were limited to 30 minutes each).

The data collected included 24 chat log files (text files), 24 discussion board files (the discussions were copied from the webpage and pasted in a text file) and 24 video files (corresponding to the 24 videoconferencing sessions). The video files were transcribed, time-aligned and annotated using EXMARaLDA Partitur Editor, a tool originally designed for the transcription and annotation of spoken language. What makes EXMARaLDA different from most other transcription tools is that it can also be used for the annotation of written language (imported from text files), thus making it possible to research different data types with the same tool. Chat log files and discussion board files were also imported in EXMARaLDA Partitur Editor and annotated.

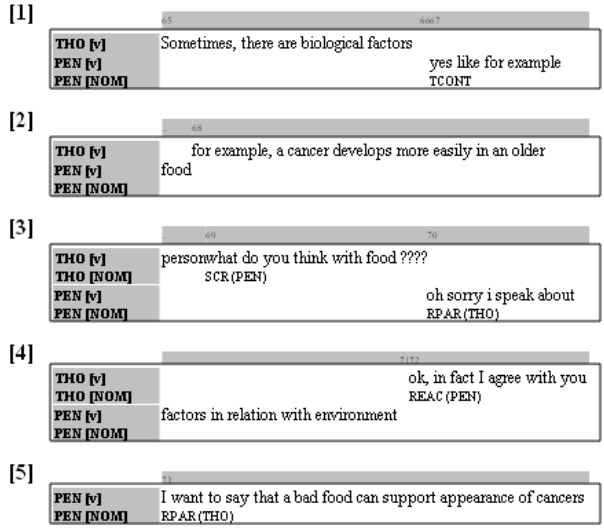
Following Long (1983), Varonis and Gass (1985) and Pellettieri (2000), negotiation routines were annotated as shown in Table 2.

Table 2. Annotation of negotiation routines

Phase	Tag	Description
TRIGGER	TLEX	Lexical trigger
	TSYNT	Syntactic trigger
	TCONT	Content-related trigger
SIGNAL	SCR	Clarification request *(What does that mean?)*
	SCC	Confirmation check *(Did you mean that…?)*
	SST	Statement of non-understanding *(I didn't get that.)*
RESPONSE	RMIN	Minimal response *(Yes/No.)*
	RSR	Self-repetition
	RPAR	Paraphrase *(with lexical elaboration)*
	RSC	Self-correction
	RCOMPC	Comprehension check *(Is it ok?)*
REACTION	REAC	Reaction to response

Following the annotation scheme, all negotiation work was annotated on a specific speaker-dependent tier (coded [NOM] for Negotiation Of Meaning), while a separate speaker-dependent tier was devoted to the verbal data itself (coded [v]), as shown in Figure 1.

Figure 1. Example of annotated data



As for negative feedback (Long, 1996), it was annotated using the scheme shown in Table 3.

Table 3. Annotation of negative feedback

Tag	Description
EXCO	**Explicit correction:** The interlocutor explicitly corrects the speaker's mistake *(It's not X, it's Y.)*.
QUES	**Question:** The interlocutor prompts the speaker to self-correct with a question *(Could you say that again?)*.
RECA	**Recast:** The interlocutor corrects the speaker's mistake by repeating the utterance in its correct form.
INC	**Incorporation:** The speaker repeats his/her utterance in its correct form following interlocutor's feedback.
SELCO	**Self-correction:** The speaker corrects his/her own mistakes without prompting from his/her interlocutor.

All negotiation of meaning routines and negative feedback were annotated on a speaker-assigned tier that was separate to the orthographic transcription tier. EXAKT, EXMARaLDA's analysis and concordancing tool, was then used to count and analyse tagged negotiation work and negative feedback.

3. Results and discussion

3.1. Global results

The very first conclusion that can be drawn from the analysis of the data collected is the fact that the completion of meaning-focused tasks through computer-mediated communication does foster negotiated interactions. This result is evidenced in Table 4 and Table 5, and is in line with previous studies on text chat (Pellettieri, 2000; Shekary & Tahririan, 2006; Smith, 2003), on audioconferencing (Jepson, 2005) and, more recently, on videoconferencing (Zhao & Angelova, 2010). No such study has been found on discussion boards.

Table 4. Negotiation of meaning routines

Phase	Tag	Number
TRIGGER	TLEX	13
	TSYNT	7
	TCONT	30
	TOTAL	**50**
SIGNAL	SCR	15
	SCC	15
	SST	28
	TOTAL	**58**
RESPONSE	RMIN	0
	RSR	5
	RPAR	34
	RSC	3
	RCOMPC	3
	TOTAL	**45**
REACTION	REAC	17

Our data shows that most negotiation routines were triggered by content-related problems (30 such triggers were counted), while very few were triggered by syntactic problems (7 in total), which can be explained by the fact that syntax has a low communicative load and thus does not foster much negotiation (Pellettieri, 2000). It should also be noted that lexical triggers, which seem to be the main cause of negotiation routines in text chat (Pellettieri, 2000), were present but not as the main type of trigger in our mixed-CMC-mode data. However, the variety of trigger types tends to show that learners engaged in negotiation work on both form (lexis, syntax) and meaning (content), as illustrated in examples 1 to 3 (Table 5 below). It should be noted that triggers were always clearly identified as being either lexical, syntactic or content-related. Although combined trigger types (i.e., a lexical trigger combined with a syntactic trigger, for example) would not be a problem in the annotation process, no such combined triggers were found in our data.

Example 1, in Table 5, shows a lexical trigger (the word *greenhouse*), followed by a clarification request from the interlocutor (FAN, on lines 6 and 7), the response to which is a paraphrase that explains what a greenhouse is (CAR, on lines 10 and

11). In example 2, it seems to be CHR's syntactically deficient sentence (line 3) which calls for a non-understanding signal from her interlocutor (CAR, on lines 6 and 7), who then repeats her question and self-corrects her mistake (line 10). In example 3, LAU signals her non-understanding with a clarification request (on lines 5 and 6), but the problem cannot be attributed to either lexis, or syntax. This time, the trigger is content-related, as LAU does not understand why MAM thinks that the biosafety level of the laboratory they are carrying out their training period in should be reassessed in the near future. MAM then explains (on lines 7 to 11) that a recent incident that occurred in the lab (a man walking in a corridor carrying dangerous cell cultures with no specific protection dropped them on the floor and sprayed them onto someone who happened to be in the corridor at that time) is the reason why she thinks the biosafety level should be reassessed. LAU then reacts to the response and shows comprehension.

Table 5. Examples 1, 2 and 3

	Example 1: TLEX		Example 2: TSYNT		Example 3: TCONT
1	CAR: Euh, moreover we	1	CHR: The last question	1	MAM: So, in a few months,
2	have to play safe and euh	2	is what do you think can	2	we will determine a new
3	perhaps build a greenhouse	3	be done the correct racial	3	biosafety level. Do you
4	in order to suppress the risk	4	disparity in the survival	4	agree?
5	of contamination by plants.	5	and treatment of cancer?	5	LAU: Can you explain,
6	FAN: Sorry, CAR, could	6	CAR: Sorry CHR, could	6	please?
7	you repeat please?	7	you repeat?	7	MAM: Yes, a mistake like
8	CAR: I said that euh we	8	CHR: Yes euh, what do	8	this should not occur. When
9	should perhaps build a	9	you think can be done	9	a man walks in a corridor
10	greenhouse. Euh it's a place	10	the = to correct racial	10	with dangerous cultures, I
11	where we put plants.	11	disparity in the survival	11	think there is a big problem.
		12	and treatment of cancer?	12	LAU: Ah, yes, OK, I
				13	understand.

Concerning the nature of signals, our data demonstrates that all three types were used by learners, the most commonly used one being statements of non-understanding (SST). Confirmation checks (SCC) and clarification requests (SCR, as illustrated in examples 1 to 3) were equally used. It should be noted that the difference between the number of signals and the number of triggers (there are more signals than triggers) can be accounted for by the fact that different signals can be attributed to the same trigger (Table 6, example 4) and that signals produced by different speakers can also be attributed to the same trigger (Table 6, example 5).

Table 6. Examples 4 and 5

	Example 4		Example 5
1	FAN: So, let's continue with the	1	CHR: Yes, euh, what do you think
2	last question. What measures	2	can be done the = to correct racial
3	should be taken on a long term	3	disparity in the survival and
4	basis?	4	treatment of cancer?
5	LAU: Euh, in fact I don't really	5	LAU: Euh, for me, euh. I don't know
6	understand the question. Can you	6	what to say about that because in fact
7	help me? It seems that we have to	7	I don't really understand the
8	take measures to avoid this	8	problem. So, I don't know.
9	problem in the future?	9	CHR: Yes, I totally agree with you.
		10	I don't understand too.

In example 4, LAU signals her non-understanding by successively using a statement (on lines 5 and 6), a clarification request (on lines 6 and 7) and a confirmation check (on lines 7 to 9). In example 5, we can see that the same content-based trigger (the question asked by CHR on lines 1 to 4) can give rise to signals from both LAU, who uses a statement on lines 7 and 8, and CHR herself, who also uses a statement (line 10).

As for responses to signals, they are mainly paraphrases (34 such responses were used), as illustrated in example 1 above. Very few self-repetitions, self-corrections (as illustrated in example 2 above) and comprehension checks were found in our data. Occurrences of negative feedback were more modest, as shown in Table 7, with the exception of unprompted self-corrections (SELCO).

Table 7. Negative feedback

Tag	Number
EXCO	1
QUES	0
RECA	6
INC	0
SELCO	112
TOTAL	**119**

Table 8 shows that only one occurrence of explicit correction was noted (example 6), very few recasts (example 7) were produced (6 in total), and no incorporation could be found, while over a hundred self-corrections occurred (example 8).

In addition, no occurrence of question was noted: this can be explained by the very pedagogical nature of such feedback which is not naturally used by NNSs communicating with each other (Long & Sato, 1983).

Table 8. Examples 6, 7 and 8

	Example 6: EXCO		Example 7: RECA		Example 8: SELCO
1	NAB: Euh, it's good to	1	GAE: Moreover, we need	1	LAU: I agree with you.
2	think to ameliorate always	2	a washer and bottled	2	Cancer begin by qualitative
3	boats and euh maritime	3	water because imagine if	3	and quantitative
4	transport in order to evitate	4	a solution arrives in your	4	modifications of genes.
5	euh…	5	eyes. Euh, it's very	5	Sorry, cancer begins.
6	NAO: Euh, excuse me. It's	6	dangerous.		
7	not ameliorate but improve	7	NEL: Euh, GAE, it's true		
8	and not evitate but to avoid.	8	that an eyewash or a		
		9	shower would be a first		
		10	step.		

In example 6, NAO explicitly corrects NAB's mistakes (on lines 6 to 8), whereas in example 7, NEL implicitly corrects GAE's utterances with a recast of the word *eyewash* (on line 8) inappropriately called a *washer* by GAE on line 2. Example 8 shows LAU self-correcting a grammar mistake (on line 5) without any prompting from her interlocutors. Generally speaking, we can say that the more explicit the correction technique is, the more threatening for the speaker's face it becomes: learners thus prefer to use self-initiated, self-completed repairs because they are less face-threatening acts than explicit repairs of an interlocutor's utterances (Schegloff, Jefferson, & Sacks, 1977).

3.2. Results per task type

The distribution of negotiation routines and negative feedback among the two different task types is clearly irregular, as shown in Table 9 below. With the exception of the optional phase (phase 4 – Reaction to response), negotiation routine phases are consistently more numerous in interactions produced during the completion of closed tasks, the total number of all four phases being 50% higher in such tasks than in open tasks. The same conclusion can be drawn from the analysis of the distribution of negative feedback: all three types of negative feedback are consistently more numerous during the completion of closed

tasks than that of open tasks. These results corroborate findings from previous research both in traditional settings (Pica et al., 1993) and network-based settings (Pellettieri, 2000): meaning-focused closed tasks, namely tasks with a limited number of possible outcomes, completed through CMC are conducive to a lot more negotiation of meaning and corrective feedback than open tasks. Research question number three has thus been answered.

Table 9. Negotiation routines and negative feedback per task type

	Type	Open tasks	Closed tasks
NEGOTIATION ROUTINES	Trigger	19	31
	Signal	22	36
	Response	17	28
	Reaction	10	7
	TOTAL	**68**	**102**
NEGATIVE FEEDBACK	Explicit correction	0	1
	Recast	2	4
	Self-correction	51	61
	TOTAL	**53**	**66**

3.3. Results per CMC mode

The analysis of the distribution of negotiation routines among the three CMC modes under study shows significant differences, as displayed in Table 10. As the amount of output produced during interaction was considerably different between the three modes (both in total number of words and in number of turns), the proportion of negotiated turns has been calculated and included in the table, in addition to raw numbers, for the sake of comparison. These results are in line with Zhao and Angelova's (2010) recent findings: overall, videoconferencing was conducive to a lot more negotiation of meaning than text chat. However, despite the low raw number of negotiation phases found in discussion boards, the proportion of negotiated turns in discussion board interactions is also superior to that found in text chat. Still, the small raw number of routine phases generated in discussion board interactions is probably due to their asynchronous nature, which means that a reply can occur several days after the original post was first written, thus not really encouraging question/answer moves as they could take a long time to be completed.

Table 10. Negotiation routines per CMC mode

Phase	Tag	Text chat		Videoconferencing		Discussion board	
		Number	% of turns	Number	% of turns	Number	% of turns
Trigger	TLEX	3	0,1%	9	1%	1	0,5%
	TSYNT	0	-	6	0,6%	1	0,5%
	TCONT	12	0,5%	16	1,8%	2	0,9%
	TOTAL	**15**	**0,6%**	**31**	**3,4%**	**4**	**1,9%**
Signal	SCR	8	0,3%	4	0,4%	3	1,5%
	SCC	3	0,1%	10	1,1%	2	0,9%
	SST	6	0,3%	21	2,3%	1	0,5%
	TOTAL	**17**	**0,7%**	**35**	**3,8%**	**6**	**2,9%**
Re-sponse	RSR	0	-	5	0,5%	0	-
	RPAR	12	0,5%	18	2%	4	1,9%
	RSC	2	0,1%	1	0,1%	0	-
	RCOM-PC	0	-	3	0,3%	0	-
	TOTAL	**14**	**0,6%**	**27**	**2,9%**	**4**	**1,9%**
Reaction	REAC	8	0,3%	9	1%	0	-

If we now take a closer look at the nature of the triggers, we can see that no syntactic trigger was found in text chat: this can be explained by the fact that text chat interaction generates shorter turns (9 words per turn on average, versus 55 for videoconferencing sessions and 130 for discussion board interactions), which means less complex sentences, thus greatly limiting potential syntactic problems. Content-related triggers were the most numerous trigger types found in our data.

The most widely used signal type in both synchronous CMC modes is statements of non-understanding: this could be explained by the fact that statements are less syntactically complex (i.e., easier to formulate for NNSs) than both other types (clarification requests and comprehension checks) which are questions, thus considered to be more difficult to formulate on the spot by many learners. Not surprisingly though, this is not the case in discussion board interactions which generate more clarification requests and comprehension checks than statements. This could be due to the fact that asynchronous contributions can be more easily thought out, making it easier for learners to produce more complex utterances.

A closer analysis of response types shows that self-repetitions (RSR) and comprehension checks (RCOMPC) are absent from both text chat and discussion board interactions, but not from videoconferencing sessions, which is consistent with Jepson's (2005) findings about audioconference and text chat. Self-repetition seems fairly unnecessary in text chat and discussion board interactions since interactants still have access to their interlocutors' previous contributions, which could explain why no such response could be found in these two CMC modes. As for comprehension checks, they are sometimes considered to be too pedagogical (Long & Sato, 1983) to be used naturally by learners. Finally, the most widely used response type is paraphrases, possibly because this is seen as being the most effective way of making oneself understood.

The distribution of negative feedback among the three CMC modes is displayed in Table 11.

Table 11. Negative feedback per CMC mode

Tag	Text chat		Videoconferencing		Discussion board	
	Number	% of turns	Number	% of turns	Number	% of turns
EXCO	0	-	1	0,1%	0	-
RECA	2	0,08%	4	0,4%	0	-
SELCO	59	2,6%	53	5,8%	0	-
TOTAL	**61**	**2,7%**	**58**	**6,4%**	**0**	**-**

As was the case for negotiation routines, videoconferencing generated more negative feedback (in proportion of turns) than the other two CMC modes, even if text chat globally gave rise to more negative feedback in raw number. The fact that more occurrences of self-correction were found in text chat and videoconferencing is not surprising though: due to their asynchronous nature, discussion board interactions can be carefully thought out and checked for language, which is not the case in text chat and videoconferencing sessions. It is thus suggested that the nature itself of discussion board interaction is accountable for the total absence of negative feedback, as synchrony seems to be required to foster all types of negative feedback, namely explicit correction, recasts and self-correction.

4. Conclusion

The analysis of our data has demonstrated that negotiation work occurs using all three CMC modes, thus providing an answer to research question number one. However, it has also shown that the distribution of negotiation routines and negative feedback among these modes is significantly different, thus answering question number two: videoconferencing sessions contained more negotiated turns (negotiation routines and negative feedback) than both text chat and discussion board interactions. In terms of negotiation routines, our data has also demonstrated that discussion board interactions contain a higher proportion of negotiated turns than text chat. Nevertheless, it should also be noted that discussion board interactions generated no negative feedback at all, which counterbalances their superiority in terms of negotiation routines.

From a more qualitative point of view, our study reports differences in the routine and negative feedback types generated with the three different CMC modes. It supports previous research findings about the importance of task type as regards the quantity of negotiation work generated (Pellettieri, 2000): closed tasks were shown to foster more negotiation of meaning (routines and negative feedback) than open tasks.

Our study also contributes to the discussion of the potential benefits of CMC-negotiated interactions to interlanguage development. Although our objective was to better characterise and compare negotiation work in text chat, videoconferencing sessions and discussion board interactions, our results should not be generalised to other settings without great caution as many variables could have influenced our findings. For example, Flashmeeting, the desktop videoconferencing tool used, does not allow for multiple speakers to talk at the same time: a queuing system enabling interactants to ask for the floor has to be used. Our results might have been slightly different if the videoconferencing system had given different speakers the opportunity to talk at the same time, thus making interactions even more synchronous (for those who want the floor but have to wait their turn) than they were with Flashmeeting.

More empirical research is needed to explore the potential of CMC for negotiation of meaning between NNSs, especially the role of videoconferencing, which remains very uncommon in such research, and its potential differences and similarities with audioconferencing (voice chat).

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